ORDER

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

6850.21

1/9/81

SUBJ: OMNIDIRECTIONAL APPROACH LIGHTING SYSTEM (ODALS)

1. PURPOSE. This order directs the use of standard drawings, series D-6067, D-6027, and D-6155 (appendix 1), and Specification FAA-C-2642, Construction of an Omnidirectional Approach Lighting System (ODALS), to establish the ODALS using components furnished under Contract DOT-FA79WAI-132.

2 DISTRIBUTION. This order is distributed to branch level in Airway Facilities Service and Office of Airport Planning and Programming, to division level in Air Traffic, Logistics, and Systems Research and Development Services and Office of Flight Operations in Washington headquarters; to branch level in the regional Airway Facilities, Airports, Air Traffic, and Flight Standards divisions (except AEU); and to Director level at the FAA Technical Center and Aeronautical Center.

3. BACKGROUND. Drawings D-6067-0 through D-6067-4 and D-6027-1 through D-6027-2 are issued to provide the proper installation of ODALS equipment manufactured by Sonicraft, Inc., of Chicago, Illinois, under Contract DOT-FA79WAI-132 for ODALS frangible system mounting height of 0 to 128 feet - 0 inches. Tower structures of 6 feet to 40 feet will be procured by the regions using Specification FAA-E-2604, Low Impact Resistance Structures for Medium Intensity Approach Lighting Systems. For tower structures 40 feet and above, utilize the drawings, series D-6155-1 through D-6155-22.

4 APPLICATION. Drawing D-6067-0 is a typical title sheet for project drawings. Drawing D-6067-1 shows the typical site layout plan and profile for ODALS. This drawing is to be used as a guide and checklist for information that is required on the project site layout drawings. The access road and turnaround, which shall be constructed in accordance with access road drawings D-5980-1 and -2, are optional and should be site-determined by regional requirements. Actual siting of the system shall be in accordance with the latest edition of Order 6850.2, Visual Guidance Lighting Systems. Drawings D-6067-1 through -4 have been developed as standard construction and electrical installation drawings for the ODALS lighting system with low-impact resistance supporting structure as specified in Specification FAA-E-2604 and installed in accordance with Specification FAA-C-2642, Construction of an Omnidirectional Approach Lighting System (ODALS). Foundation designs are based on a minimum safe soil-bearing pressure of 3,000psf and lateral soil pressure of 200psf per foot of depth below grade for applied loading conditions tabulated on drawing D-6067-5. Depth of foundation footings shall be as shown on drawings or one foot below local frost depth, whichever is greater. The local frost depth shall be noted on the project site plan. Where the actual site soil-bearing strength is less than 3,000 psf and/or the local frost depth is greater than 5 feet - 0 inches, the foundation designs as shown on the drawings shall be modified

as required to suit existing soil conditions. Power source configurations are site-determined; therefore, the most economical service extension shall be set forth on the project site layout and an appropriate service extension detailed drawing developed. These drawings shall be used for all future establishment, relocation, and currentconstruction projects for the equipment identified in paragraph 1 of this order. Inquiries or comments regarding these drawings shall be directed to the Chief, Environmental Systems Division, AAF-500, Airway Facilities Service.

5. REMOTE HEADFLASHER. The sequenced flashers have a remote flasher head separate from the power supply; installation instructions are contained in the equipment instruction book.

6 REMOTE CONTROL. There are three remote radio control configurations for controlling ODALS, depending on the type of air traffic control facilities: ground-to-ground and air-to-ground combination system, ground-to-ground system, and air-to-ground system. The remote control equipment is procured by the region with frequency pretuned by the manufacturer.

a. The combination radio control system allows remote control of the ODALS from the airport traffic control tower (ATCT) or flight service station (FSS) over a frequency modulated (fm) radio link. When the ATCT or FSS is not operating, the control is switched to an amplitude modulated (am) receiver to be operated by the aircraft pilot. The combination system is installed either at a part-time ATCT or at a part-time FSS when there is no ATCT on the airport.

(1) The ground-to-ground and air-to-ground combination radio control system is composed of the following equipment:

(a) One fm transmitter installed at the ATCT or FSS.

(b) One manual control console with 96 function capability installed at the control point in ATCT or FSS.

(c) One antenna for the fm transmitter installed on the roof of the ATCT or FSS. Use another location if intermode interference is experienced.

(d) One fm receiver/decoder installed at the ODALS power control unit.

(e) One antenna for fm receiver installed at the ODALS control unit.

(f) One interface unit installed between the fm receiver/decoder and/or the air-to-ground receiver/controller and the ODALS control unit.

(g) One am receiver/controller installed at the ODALS control unit.

(2) The installation of a ground-to-ground and air-to-ground combination radio control system requires testing after completion or during the work. The testing to be conducted by the contractor is described in Specification FAA-C-2642, Division 11, Construction of an Omnidirectional Approach Lighting System (ODALS). The FAA shall test and tune-up, as described in AF P 6910.3, change 90, chapter 67,

paragraph 15.f., g., h., i., and j., remote control for FA-8767 MALSR at locations without an ATCT or FSS. These procedures were written for lighting systems procured under another contract but are applicable to this equipment.

b. The ground-to-ground radio control system allows remote control of the ODALS from only the ATCT or FSS over an fm radio link. The ground-to-ground system is installed either at a full-time ATCT or at a full-time FSS when there is no ATCT on the airport,

(1) The ground-to-ground radio control system is composed of the equipment described in paragraphs 6.a.(1)(a), (b), (c), (d), (e), and (f), above.

(2) The installation of a ground-to-ground radio control system requires testing after completion or during the work. The testing to be conducted by the contractor is described in Specification FAA-C-2642, Division 11, Construction of an Omnidirectional Approach Lighting System (ODALS). The FAA shall test and tune-up as described in AF P 6910.3, change 76, chapter 66, paragraphs 15.e., f., and g., remote control for FA-8091 MALSR at locations having (1) full-time ATCT, with or wirhout an FSS, or (2) full-time FSS only. These procedures were written for lighting systems procured under another contract but are applicable to the equipment.

c. The air-to-ground radio control system allows remote control of ODALS through an am receiver/controller by the aircraft pilot. The air-to-ground system is installed at locations having no air traffic control operation. The air-to-ground radio control system has two control functions with expansion capability to a three-function system.

(1) The air-to-ground radio control system is composed of the equipment described in paragraphs 6.a.(1)(f), and (g).

(2) The installation of an air-to-ground radio control system requires testing after completion or during the work. The testing to be conducted by the contractor is described in Specification FAA-C-2624, Division 11. The FAA shall test and tune-up as described in AF P 6910.3, change 83, chapter 62, paragraphs 15c. and d, remote control for FA-8767 MALSR at locations without an ATCT or FSS. These procedures were written for lighting systems procured under another contract but are applicable to this equipment.

7. FREQUENCY ASSIGNMENT. Each application for a frequency authorization shall be coordinated by FAA regional and Washington office frequency managers on a case-by-case basis prior to making an operational assignment.

a. The frequency assignments for the transmitters/receivers used in the ground-to-ground remote radio control application shall be from 162-174 MHz, Em with lo-watt output, short-range, low-use (less than one percent of the time). Technical standards for operations in the 162-174 MHz band are found in paragraphs 5.4.7 of the Office of Telecommunication Policy, Manual of Regulations and Procedures for Radio Frequency Management. Authorized emissions are 16F2 and 16F3.

b The region may obtain authorization to use the ATCT local control frequency for air-to-ground control of airport lights during hours when the ATCT is shutdown. Similar authorization may be obtained for air-to-ground control on FSS frequencies at non-ATCT airports.

c. At non-ATCT/non-FSS airports, authorization may be obtained for air-to-ground control on frequencies in the band from 121.95 to 123.05 MHz.

d Air-to-ground control is not recommended on ground control frequencies. However, ATCT to airport lighting control point assignments may be obtained on these frequencies.

8. AIR TRAFFIC INTERFACE. The installation of the remote radio control console shall be coordinated with the Air Traffic divisions in the regions.

9 FLIGHT STANDARDS INTERFACE. The ODALS shall be flight inspected to assure that the remote radio control perform satisfactorily; this includes the remote radio control system.

10. DEVIATION FROM STANDARD. No deviation from the standard is authorized without the prior approval of the Director, Airway Facilities Service. Parking lots, access roads, and similar details are authorized without further clearance. Dimensional errors, discrepancies, or suggestions for modification or addition of details should be brought to the attention of Chief, Environmental Systems Division, AAF-500.

11. CORRECTIONS TO STANDARD. Corrections to the standard may be made by the Director, Airway Facilities Service, without further regional or inter-service coordination. These may include corrections of dimensional errors, misspellings, and modification, addition, or deletion of details.

12. DISTRIBUTION OF DRAWINGS. A reproducible copy of each drawing is being forwarded to the FAA Technical Center; each region (except AEU) Attention: Airway Facilities Division; and two copies of each drawing to the Aeronautical Center, Attention: Chief, FAA Depot. Additional copies may be obtained from the Airway Facilities Service, Attention: AAF-10.

Donald A. Schroeder

for GERALD L. THOMPSON
Director, Airway Facilities Service

APPENDIX 1. OMNIDIRECTIONAL APPROACH LIGHTING SYSTEM (ODALS)

Number	Date	Title
D-6067-0		Title/Index.
D-6067-1		Plan and Profile.
D-6067-2		Plans and Access Road Details.
D-6067-3		Equipment Installation Details.
D-6067-4		Electrical Details and Wiring Diagrams,
D-6067-5		Foundation Plans and Miscellaneous Details for Low Impact Resistant Towers 6'-0" to 40'-0".
D-6027-1	11/3/76	Remote Radio Control, Interface Unit, Electrical Wiring Diagram.
D-6027-2	11/3/76	Remote Radio Control, Interface Unit, Assembly Unit.
D-6155-1 thru -22	5/3/79	Approach Lighting System with Sequenced Flashers -2 (ALSF-2) 6' to 128', and Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) 40' to 128'.